



*Monthly Wednesday Night
Demonstration*

March 20, 2019

Making Soft Cheeses



Resources:

- Please visit the National Center for Home Food Preservation at <http://nchfp.uga.edu> for detailed information about research-based methods of home food preservation.
- UC ANR Catalog (<http://anrcatalog.ucanr.edu>)

Should you need assistance or require special accommodations for any of our educational programs, please contact us at 916-875-6913.

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BASIC CHEESE MAKING

Cheese making is a long process, taking hours and sometimes days. Aged cheese may take weeks or months to age. The recipes included in this handout are recommended for beginners. These are soft cheeses and require little equipment to produce. They are eaten fresh, requiring no long aging times. These cheeses must be kept in the refrigerator and will keep for about one week.

FOOD SAFETY CONCERNS

There are four major pathogens associated with fresh cheese. These can cause foodborne illness. They are: *Salmonella*, *E. coli*, *Listeria monocytogenes*, and *Staphylococcus aureus*. These pathogenic bacteria are controlled by good sanitation of equipment and food contact surfaces, proper cooking, cooling and handling of cheese curds during processing, and proper hand washing.

ESSENTIAL TOOLS/EQUIPMENT

1. Large stock pot, generally 6 to 8 quarts. The pot should be stainless steel or unchipped enamel. Avoid pots made of aluminum or other reactive metals.
2. Thermometer, digital or a candy thermometer. Make sure the thermometer goes low below 100 °F for your recipe as some candy thermometers start at 200°F.
3. Measuring spoons and cups, stainless steel, glass or plastic.
4. Long-handled spoon and slotted spoon. You need a spoon for stirring as well as a spoon to remove the curds from the whey. They can be stainless steel, plastic or nylon. However, stainless steel is the easiest to clean.
5. Large bowl for heating milk indirectly or catching whey.
6. Cheese cloth, butter muslin or flour sack towel to drain the curds.
7. Colander or strainer made from any non-reactive material (plastic, metal, enamel). As with other utensils, avoid aluminum or other reactive material, even when lined with cheesecloth.

SANITIZATION

All equipment must be cleaned and sterilized before and after cheese making. Most home cheese making failures are caused by unclean or unsterile equipment.

You must sterilize your equipment before use.

1. Boil all cheese-making equipment for 5 minutes or soak all cheese-making equipment in a bleach water solution for 2 minutes.

Bleach Water Solution:

- 1 gallon of water
- 1 tablespoons household unscented bleach

2. Reuse cheese cloth, butter muslin or flour sack towel **only** if they have been sanitized (see next page).

When you are finished with a utensil, rinse it thoroughly with cold water. Then wash it in hot water with a good dishwashing detergent. Rinse thoroughly in hot water.

CLEANING AND REUSING CHEESECLOTH OR BUTTER MUSLIN

If the cloth is only used to drain curds, it will not be as difficult to clean as if it is used to press or age cheese for a long period of time.

How to Reuse Cheesecloth or Butter Muslin:

1. Rinse immediately after use.
2. Wash in the washing machine or by hand in the sink.
3. Avoid detergents and fabric softeners. Use only mild detergent if necessary, and rinse thoroughly to remove any soap residue.
4. If there are bits of curd sticking to the cloth, rinse with whey or white vinegar to help remove it.
5. For sterilization, soak the cheesecloth or butter muslin for a couple hours in a bowl of water with 1 cup vinegar added or the Bleach Water Solution. Rinse thoroughly before hanging it out to dry.
6. As soon as the cheesecloth or butter muslin is dry, fold and store in a zipper-style plastic bag until ready to use again.

MILK

Milk is a complicated substance. Seven-eighths of it is water. The rest is proteins, minerals, milk sugar (lactose), milk fat, vitamins and trace elements. As a result, variation in the quality of cheese does occur, depending on the type of milk used.

When we make cheese, we cause the protein part of the milk to curdle. Cheese can be made from whole milk, 2%, 1%, skim milk or reconstituted milk powder. Whatever type of milk used, it should always be pasteurized. The fresher the milk, the better the cheese.

- Raw milk is that which is collected from a dairy animal and not processed further. **It may contain harmful bacteria. ALWAYS PASTEURIZED RAW MILK BEFORE IT IS USED TO MAKE SOFT CHEESES.**
- Pasteurized milk is milk that has been heated to destroy all pathogens. All milk purchased in the store has been pasteurized.
- UT (Ultra-Pasteurized) or UHT (Ultra High Temperature) pasteurized milk is milk that has been heated to 191° to 212°F and 280°F respectively to kill bacteria and extend shelf life. Avoid using this milk as this process changes the protein structure of the milk, preventing it from separating into curds and whey.
- Homogenized milk is milk that has been subjected to a process that breaks up the fat globules so that they will no longer separate from the milk. Most milk purchased at the store has been homogenized. You can use homogenized milk to make cheese.
- Whole milk is pasteurized milk with 3.25% fat (by weight)
- Skim milk is milk that has had some or all of its fat removed.
- Homogenized milk is milk that has been subjected to a process that breaks up the fat globules so that they will no longer separate from the milk. Most milk purchased at the store has been homogenized. You can use homogenized milk to make cheese.
- Milk Powder can be reconstituted and used in cheese making.

WHAT IS PASTEURIZATION?

Pasteurization destroys most disease producing organisms and limits fermentation in milk, beer and other liquids by partial or complete sterilization. The pasteurization process heats milk to 161°F for 15 seconds, inactivating or killing organisms that grow rapidly in milk. Pasteurization does not destroy organisms that grow slowly or produce spores. While pasteurization destroys many microorganisms in milk, improper handling after pasteurization can re-contaminate milk. Raw milk can also be pasteurized on the stovetop. Microwaving raw milk is not an effective means of pasteurization because of uneven heat distribution.

How do I pasteurize milk?

Milk must be heated, with agitation, in such a way that every particle of the milk, including the foam, receives a minimum heat treatment of 145°F continuously for 30 minutes or 161°F for 15 seconds. The temperature should be monitored with an accurate metal or protected glass thermometer. Commercial operations commonly use a high temperature, short-time process in which the milk is heated to 170°F for 15 seconds and then cooled immediately to below 40°F to increase storage life without any noticeable flavor change in the milk. Pasteurization of fluid milk has very specific requirements for time and temperature as listed in the chart.

Temperature-Time Pasteurization - Requirements for Fluid Milk

<i>Temperature</i>	<i>Time</i>
145°F (63°C)	30 minutes (vat pasteurization)
161°F (72°C)	15 seconds (high temperature, short time pasteurization)
191°F (89°C)	1 second (Higher-Heat, Shorter Time)
212°F (100°C)	0.01 second

WHEY

Whey is the yellowish liquid left over when you make various cultured milk products. Whey still contains lactose. Whey may be frozen up to 3 months until used. There are actually two kinds of whey.

ACID WHEY

Acid whey is the liquid produced from making more acidic cultured dairy products such as paneer, feta, chevrè, or **whole milk ricotta**.

USES FOR ACID WHEY

- Soak grain in acid whey for making breads.
- Feed acid whey to animals. They may like sweet whey better than acid whey. Whichever kind you feed them, be careful, because it can upset their digestion if they consume too much. **Cats should not be feed whey.**

SWEET WHEY

Sweet whey is the liquid that is produced when making hard cheese like cheddar or **most soft cheeses**.

USES FOR SWEET WHEY - You can use sweet whey the same way you use acid whey, and you can:

- Add it to smoothies and shakes to provide more vitamins, minerals, and proteins.
- Use as cooking liquid for potatoes, rice, grits, pasta, and grains.
- Drink it straight!
- Put it in your compost pile. It adds nutrients and makes thick, black compost.

CHEESE SALT

Cheese salt is merely a salt that is non-iodized. Iodized salt harms and inhibits bacterial growth and well-being that is essential to any good cheese-making. **You can use any non-iodized salt in cheese-making.** Salt is important in a number of cheese-making steps: it adds to the flavor of the cheese, it helps to dry the curds during draining and it will help to kill bacteria and other harmful growth when used as a brine.

CALCIUM CHLORIDE

Not included in our recipes here, but in other recipes you may see calcium chloride added. Calcium chloride adds calcium that may be lost during pasteurization. That calcium will help stabilize the proteins in the milk and add some acidity. This helps with coagulation to increase yield.

RENNET

Rennet is used to coagulate and separate the milk into curds (solid) and whey (liquid). Rennet is available from both animal and vegetable sources, is commonly found in either liquid or tablet form, and is available in either single or double strength.

Always dilute rennet in cool, non-chlorinated water before adding it to the milk. If rennet is not diluted, it will be unevenly distributed in the milk.

If using a rennet tablet, crush it (either with back of spoon or mortar and pestle) before diluting it in the water. If using double-strength rennet, remember to half the amount called for in the recipe.

Store liquid rennet in the refrigerator and rennet tablets the freezer.

Note: Junket rennet is a very weak form of rennet and is not used to make cheese.

HOW TO MAKE CREAM CHEESE

Cream cheese has a mild, smooth texture and a slight citrus flavor balanced with buttery cream. Cream cheese can be blended with fruit and seasonings, used as a dip or spread, or used in desserts such as cheesecake.

Ingredients

- 3-1/2 quarts whole pasteurized milk (not ultra-pasteurized)
- 1 pint pasteurized whipping cream
- 3/4 to 1 cup fresh buttermilk for culture
- One rennet tablet or 1 teaspoon liquid rennet dissolved in 1/2 cup water
- 1-1/2 teaspoons salt

Equipment

- 1 gallon stainless steel pan or any non-aluminum or non-cast iron pan
- Instant-read thermometer or candy thermometer
- Measuring cups and spoons
- Colander or strainer
- Cheese cloth
- 4-quart mixing bowl to collect whey
- Slotted spoon
- Extra spoon
- Long knife

Instructions

1. Place milk, cream, and buttermilk in pan. Warm slowly to 85°F while stirring. Use thermometer to check temperature.
2. Add rennet mixture, then stir gently for 4 minutes.
3. Cover the milk and let stand for 1 hour or until the whey covers the curd and breaks clean from the side of the pan. Maintain a temperature of 85°F.
4. Cut the curd into 1-inch cubes and allow to stand undisturbed for 5 minutes.
5. Pour mixture into a muslin bag or cheesecloth-lined colander. Drain overnight in the refrigerator.
6. With a wooden spoon, work in 1-1/2 teaspoons salt. Package and store cream cheese in the refrigerator.

Source: New Mexico State University

https://aces.nmsu.edu/pubs/_e/E216/welcome.html

CREAM CHEESE, continued

Tips

1. When you mix the milks together, be gentle. It is recommended you use a slotted skimmer or spoon. Put the spoon just under the surface of the milk mixture and gently move it up and down not breaking the surface of the mixture. This mixes the milk without adding air. Use this same technique when adding rennet.
2. Warm the milk to 85°F. It does not take long to heat to 85° F, so stay with it and watch it closely. You can keep the milk gently moving to assist in preventing scorching.
3. Dilute the rennet in 1/2 cup of water (as low in chlorine as you can find, i.e. filtered, distilled, spring). Don't do this more than 30 minutes before you are going to use this. If you use a rennet tablet, crush it with a mortar and pestle before putting it in the water. If you use a double-strength liquid rennet, cut by 1/2 the amount of rennet the recipe calls for.
4. Remove the milk from the heat and stir in the rennet mixture – remember to use the method described above when you mixed the milks (folding in very gently). Cover and let stand in a warm place (keep the temperature at or near 85 degrees) for 1 hour.
5. Test the curd – is it set? You can test the curd by looking at the mixture – have the curds dropped beneath the whey? If yes, insert a thin spatula into the curd at about a 30-degree angle and lift up – you are looking for a long clean break or crack.
6. If yes, gently cut into 1 inch cubes. The goal is to cut the curd into about 1” cubes while keeping them together as much as possible. The rougher you are the higher the chance that pieces of curd may break off into the whey and be too small to separate out from the whey during draining, thereby reducing your cheese yield. Once cut, let it rest for 5 minutes.
7. Gently ladle curds into cheesecloth lined containers.
8. Place or hang your bundle over a bowl or pan in the refrigerator. Attaching the bundle to a spoon over a pot works well.
9. When drained, unwrap your cheese and work in salt.

HOW TO MAKE RICOTTA

Makes 4 cups or approximately 1-3/4 pounds

Ingredients

- 1 gallon pasteurized whole milk (*not ultra-pasteurized*)
- 2/3 cup lemon juice (fresh or bottled) or 2/3 cup distilled white vinegar or 1 teaspoon citric acid
- 2 teaspoon salt, optional

NOTE: This recipe may be cut in half.

Equipment

- 8-quart pot
- Instant-read thermometer or candy thermometer
- Measuring cup and spoons
- Cheese cloth, butter muslin or flour sack towel
- Strainer or colander
- 4-quart mixing bowl to catch whey
- Extra bowl
- Spoon for stirring
- Slotted spoon
- Timer

Instructions

- **Warm the milk to 200°F:** Pour the milk into a 8-quart pot and set it over medium heat. Let it warm gradually to 200°F, monitoring the temperature with an instant read thermometer. This could take as long as an hour. The milk will get foamy and start to steam; remove it from heat if it starts to boil.
- **Add the vinegar and salt:** Remove the milk from heat. Pour in the vinegar or lemon juice (or citric acid) and the salt. Stir gently to combine.
- **Let the milk sit for 10 minutes:** Let the pot of milk sit undisturbed for 10 minutes. After this time, the milk should have separated into clumps of milky white curds and thin, watery, yellow-colored whey — dip your slotted spoon into the mix to check. If you still see a lot of un-separated milk, add another 1 to 2 tablespoons of lemon juice or vinegar or 1/8 teaspoon of citric acid and wait a few more minutes.
- **Strain the curds:** Set a strainer over a bowl and line the strainer with cheese cloth. Scoop the big curds out of the pot with a slotted spoon and transfer them to the strainer. Pour the remaining curds and the whey through the strainer. (Removing the big curds first helps keep them from splashing and making a mess as you pour.)
- **Drain the curds for 10 to 60 minutes:** Let the ricotta drain for 10 to 60 minutes, depending on how wet or dry you prefer your ricotta. If the ricotta becomes too dry, you can also stir some of the whey back in before using or storing it.
- **Use or store the ricotta:** Fresh ricotta can be used right away or refrigerated in an airtight container for up to a week. For longer storage, it may be frozen for up to 6 months.
- **Making Fresh Ricotta Salata:** If you'd like to make a fresh farmer's cheese (Ricotta Salata) from this ricotta, wrap it in cheese cloth and press it beneath a weighted plate in the refrigerator overnight.

Source: adapted from New Mexico State University, http://aces.nmsu.edu/pubs/_e/E216/

HOW TO MAKE YOGURT CHEESE

Yogurt cheese is yogurt which has been strained in a cloth or paper filter to remove the whey. Depending on the amount of time left to drain, this provides for a consistency somewhere between that of yogurt and cream cheese, while preserving yogurt's distinctive tart flavor.

Some commercial yogurts have added gelatin, vegetable gum, or food starch to prevent the "set" from breaking down during packaging. **Avoid stabilizers if making yogurt cheese, since the stabilizers prevent whey from separating out.**

Yogurt cheese can be used as a substitute for cream cheese, mayonnaise, and sour cream in dips, sauces, and spreads.

Ingredients

- Plain yogurt (no stabilizers)

Equipment

- Strainer
- Paper coffee filter or cheesecloth
- Bowl or tall glass to catch liquid whey

Instructions

- Line strainer with coffee filter or cheesecloth.
- Place strainer over bowl or glass.
- Spoon yogurt into filter or cheesecloth.
- Cover with plastic wrap.
- Refrigerate 8 to 24 (even 48) hours until the whey has drained and yogurt is spreadable or "cheese like", or the desired consistency you are looking for.

Note

- The longer straining period makes for a thicker cheese.
- After straining off the whey, about 1/2 to 2/3 of the original amount of yogurt remains.

Yield

1 quart (32 oz) yogurt = 1 to 2 cups yogurt cheese

Source: Washington State University Extension
<https://extension.wsu.edu/clark/healthwellness/foodpreservation/>

CREAM CHEESE AND YOGURT CHEESE SPREADS

Basic Fresh Herb Cream or Yogurt Cheese Spread

- 6 oz. cream or yogurt cheese
- 2 to 3 Tablespoons chopped fresh herbs (or 1 to 3 teaspoons of dried herbs)

Mix together and let rest in the refrigerator for at least 2 hours or overnight to develop the flavors. Please experiment with your favorite flavor combinations

Other Creative Uses for Cream or Yogurt Cheese

- Add chopped fresh chives or green onion for a potato topper
- Mix with dry salad dressing mix for dips (1 envelope to 2 cups cheese)
- Add smoked salmon or a bit of blue cheese for a dip or spread
- Add mustard, onion and a bit of brown sugar for potato salad dressing

Other Mix-Ins to 1-1/2 cups Yogurt or Cream Cheese

- Strawberry Cheese: Mash 1 cup of strawberries with 1 teaspoon of sugar. Stir into the cheese.
- Dried Plum (Prune) Cheese: Stir in 1/2 cup of prune butter and 1 teaspoon of grated lemon zest.
- Herbed Cheese: Stir in 1 teaspoon of grated lemon zest and 1/3 cup of mixed chopped fresh herbs such as dill, basil, mint, cilantro, parsley, tarragon, or chives.
- Roasted Garlic Cheese: Wrap 1 large bulb of garlic in a sheet of foil and roast at 400 degrees F for 30 minutes, or until soft. Squeeze out the garlic, mash until smooth and stir into the cheese.
- Pesto Cheese: Stir in 3 tablespoons of pesto, homemade or store bought.
- Spiced Cheese: Stir in 2 teaspoons each of ground cumin and ground coriander, 1 teaspoon of chili powder, and 1/4 teaspoon of pepper.

Cream Cheese tastings:

1. Fresh basil and sun dried tomatoes
2. Fresh dill and roasted garlic
3. Cinnamon and brown sugar

Yogurt Cheese tastings:

1. Blueberry with lemon zest
2. Green onion and Zesty Italian mix